SAP Manufacturing Execution

How-To Guide

How To Use the SAP ME Archiving Feature

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Document History

Document Version	Description	Author
1.0	Initial version	Chet Moutrie

2.0	Updating to include Message Log Archiving and RTL and CTL (Time Based Components (TBCT) Archive)	Charlie Cutler

Table of Contents

1 Introduction

1.1 Purpose

The ME How-To-Guide for Archiving is intended to provide sufficient information to enable the user to easily utilize the SAP ME Archiving feature, making use of available best practices.

1.2 Scope

This information covers all aspects of the SAP ME Archiving feature. It does not cover in detail the use of the ODS database ODS tables for holding detail and summary history data removed from the WIP database. For more information regarding the ODS tables, see the SAP ME HowTo-Guide – ODS Setup.

The ODS database contains ODS tables (used primarily for external reporting), Audit Log tables (used for logging and viewing changes made to the SAP ME master data) and the Archive tables (used to hold information regarding SFCs removed from the WIP database). This How-To-Guide is focused primarily on the use of the Archive tables.

1.3 Glossary

Archive tables	The tables in the ODS database that hold data, related to specific SFCs and shop orders, that has been removed from the WIP database
Audit Log tables	The tables in the ODS database that hold the history of changes to the ME master data made via maintenance activities
ODS	Operational Data Store
ODS database	The ME database that consists of Audit Log tables, ODS tables and Archive tables
ODS tables	The ME operational data store tables that hold production history details and summary history data for reporting and query purposes
WIP	Work In Process
WIP database	The ME transactional database that holds all of the current data regarding the manufacturing execution objects and processes and the ME system status
RTL	Resource Time Log
CTL	Component Time Log
Message Board	Messaging POD in ME, used to send messages about important system information or Free Form Messages to Group of users.
Message Log Tables	The tables in the ODS database that hold the history of changes to the

2 Archiving Overview

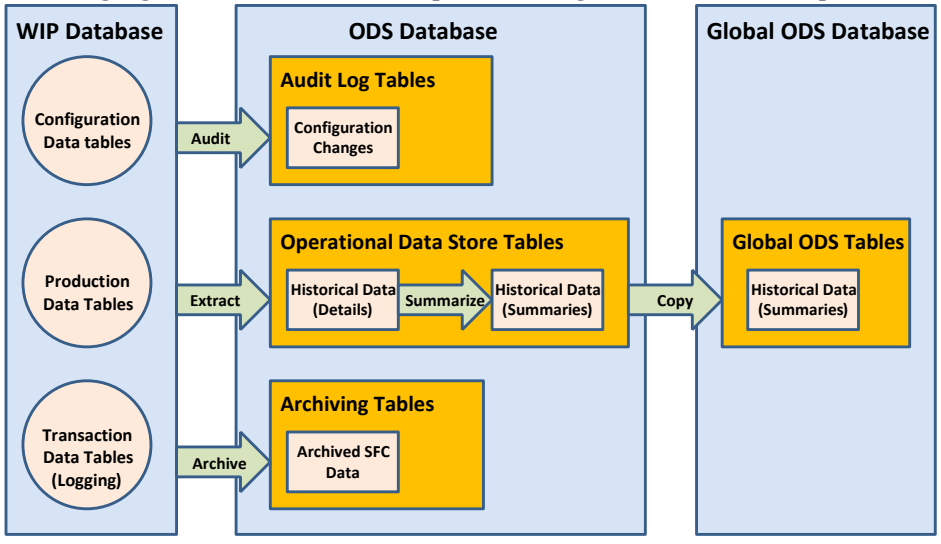
This overview will provide a high level description of the configuration and use of the SAP ME Archiving feature.

2.1 Description and Applicability

The ODS Archiving tables provide storage for ME SFC, Shop Order, Time Based Component Traceability (TBCT) and Message Log related data no longer needed for production processing but needed to meet retention requirements or to meet reporting needs. These tables contain data for SFCs, shop orders, Time based Components, and Message Log and related objects managed by ME.

During real-time transactions, SAP ME stores data in the WIP (Work In Process) database tables. These tables are designed and indexed to optimize data management for the real time functions of SAP ME. Production data can be periodically transferred to the ODS tables and summarized in the ODS summary tables. These tables are designed and indexed to optimize their use in the creation and running of reports. WIP data modified via the ME maintenance activities can be stored in the Audit Log tables of the ODS database. The ME Archive function stores SFC, Shop Order, Time Based Component and Message Log related data in the Archive tables of the ODS database.

The following figure illustrates and example of the high level data landscape for ME.



Data can be periodically deleted from WIP tables via ODS scripts. This is only for WIP tables that contain data that does not get archived to the Archive tables and that have corresponding ODS tables. Data in the ODS tables can be periodically deleted via ODS scripts.

The Archiving feature moves records about a unique completed product (represented by an SFC number) or about a shop order or about Closed, Revoked or Withdrawn Messages from the active work in process (WIP) database to archive tables in the ODS database. Over a period of time, the number of records in the WIP database becomes large. When the system has to search through a very large number of records, it slows down the retrieval process. Archiving records, which are no longer needed for production activities, can improve the retrieval speed of other production records. Archiving moves SFC and/or shop order and Message Log related data from the WIP database to the ODS database Archive tables.

Time Based Component Traceability

NOTE: When an active RTM record is left in WIP due to multiple SFC's on a Shop order still in work, when the other SFC is finished the record will become inactive. Then the other SFC will be archived and that should take the RTM record with it. The current query checks the RTL Active flag to determine which RTL+RTM records need to be archived along with the SFC. Based on this, this flag remains set to true if there are other SFC's at the resource that are active. It seems that the query below should remove the check for the ACTIVE='false'. Otherwise, an SFC can be archived and the associated RTL+RTM records would remain in WIP if there are other SFC's active at the same resource and archiving has been run.

Setting up archiving is an important step that should be addressed during initial ME system setup.

2.2 Business Purposes / Functions

The Archive tables and scripts are for the purpose of providing access to data for SFCs and shop orders that are no longer needed in the production WIP database, but that are still needed to meet data retention requirements or reporting needs.

The SAP ME Archiving feature provides the following functions:

- Manually Archive SFCs or shop orders
- Automatically Archive SFCs and shop orders
- Restore (un-archive) SFCs or shop orders
- Restore RTL or CTL records

In addition to the SFC objects and related data, ME will archive the following types of related ME objects:

- Closed engineering change order
- Shop order when the last SFC in the shop order is archived (automatic archiving only)
- Container when the last SFC of the container is archived
- SFC BOM when the last SFC using the BOM is archived

- Shop order BOM when the last SFC in the shop order is archived
- Closed RTL or CTL Records

Archiving can be applied to SFCs and shop orders with the following statuses:

- Done
- Closed
- Scrapped
- Deleted
- Invalid

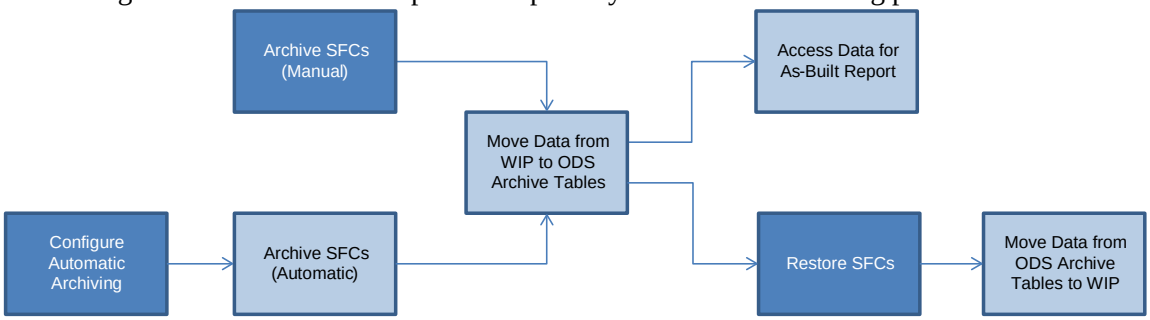
Archiving can be applied to Message Board messages with the following statuses:

- Closed
- Revoked
- Withdrawn Messages from the Message Log tables

During the archiving of an SFC, Shop Order or Message Logs, the system will process the child records in a batch update for each archive table, to reduce the amount of time taken for archiving. The system limits the number of records that can be batched together via the archive.children.update.batch.size setting in the System Setup (SS500) activity.

2.3 High-Level Process Flows

This figure illustrates and example of the primary flow of the Archiving process.



2.4 Best Practices

We recommend that archiving be run during a non-production time, if practical. This will eliminate the potential for system performance impacts during archiving.

3 Archiving Functions

3.1 Manually Archive SFC or Shop Order

The Archive (DM530) activity handles both manual archiving and restoring of SFCs and shop orders. This section of the document covers only archiving.

NOTE: Does not apply to Message Log Archive.

3.1.1 Description and Applicability

Only one SFC or shop order can be selected at a time to be manually archived. To manually archive an SFC or a shop order:

1. Select which type of object you want to archive (SFC or shop order)
2. Enter or browse and select the specific SFC or shop order
3. Select OK

The selected SFC or shop order must have one of the following status values:

- Done
- Closed
- Scrapped
- Deleted
- Invalid

If a shop order is being archived, all SFCs for that shop order will be archived as well. The following types of information and related ME objects, for the SFCs and shop order, will also be archived:

- Activity Log entries
- Attachment records
- Container information
- Container instance (if the last SFC in the container is being archived)
- Data Collection information
- Document links
- Earned Standards information
- Engineering Change Order (ECO) information
- Engineering Change Order (if ECO is closed)
- Hold Log entries
- Incident numbers
- Inventory Log entries and information
- Nonconformance information
- Parametric (Data Collection) data
- Production Comments
- Router information
- Sample plan information
- Sampling group information

- SFC assembly information
- SFC BOM (if the last SFC using the BOM is being archived)
- SFC Data
- SFC History
- SFC Router (if the last SFC using the Router is being archived)
- Shop Order BOM (only if the shop order is being archived)
- Shop Order inspection information (only if the shop order is being archived)
- Shop Order Router (only if the shop order is being archived)
- Shop Order Subassembly information (only if the shop order is being archived)
- Tool Log entries
- Transfer data
- Time Sensitive Material information
- Work Instruction Log entries

Once the archive process has completed a success message will be displayed in the POD.

3.1.2 Potential Problems

The following are problems that can occur during manual archiving.

3.1.2.1 Archive GUI Timeout

The manual archive process will time out if it has not completed within the number of minutes specified in the archive.GUI.timeout system setting property, found in the System Setup (SS100) activity.

3.2 Automatically Archive SFCs, Shop Orders and Message Logs

3.2.1 Description and Applicability

Automatic archiving will archive all SFCs which meet the following criteria:

- For the SFC, either the number of days specified in the Days Before Archiving SFC/SO system rule have elapsed or the Archive SFCs When Shop Order Is Closed or Done system rule is True and the status of the owning shop order is Closed or Done.
- The status of the SFC is one of the following:
  - Done
  - Closed
  - Scrapped
  - Deleted
  - Invalid
- For an SFC that is a component (and the Archive Component When Parent Archived system rule is True), the parent SFC is being archived

Automatic archiving will archive all shop orders which meet the following criteria:

- For the shop order, the number of days specified in the Days Before Archiving SFC/SO system rule have elapsed
- The status of the shop order is one of the following:
  - Done
  - Closed
  - Scrapped
  - Deleted
  - Invalid

The last SFC left in WIP, for the shop order, has been, or is being, archived.

Message Log Archive

Automatic archiving will archive all Messages in the Message Log tables, which meet the following criteria:

- For the Messages, the number of days specified in the Days Before Archiving SFC/SO system rule have elapsed
- The status of the Message is one of the following:
  - Closed
  - Revoked
  - Withdrawn

All of the above rules are found in the System Rule Maintenance (SY100) activity (The rules that apply are: **Days Before Archiving Message Log Entries, and Days Before Archiving SFC/SO**)

The following types of information and related ME objects, for the SFCs and shop orders, will also be archived:

- Activity Log entries
- Attachment records
- Container information
- Container instance (if the last SFC in the container is being archived)
- Data Collection information
- Document links
- Earned Standards information
- Engineering Change Order (ECO) information
- Engineering Change Order (if ECO is closed)
- Hold Log entries
- Incident numbers
- Inventory Log entries and information
- Nonconformance information
- Parametric (Data Collection) data
- Production Comments
- Router information
- Sample plan information

- Sampling group information
- SFC assembly information
- SFC BOM (if the last SFC using the BOM is being archived)
- SFC Data
- SFC History
- SFC Router (if the last SFC using the Router is being archived)
- Shop Order BOM (only if the shop order is being archived)
- Shop Order inspection information (only if the shop order is being archived)
- Shop Order Router (only if the shop order is being archived)
- Shop Order Subassembly information (only if the shop order is being archived)
- Tool Log entries
- Transfer data
- Time Sensitive Material information
- Work Instruction Log entries

The selection of rows from the MESSAGE (WIP) tables will be based on the following criteria:

- The HANDLE is a match from the MESSAGE table.
- The MESSAGE table is queried for the handles that include a STATUS field of 'C' (Closed), 'R' (Revoked) or 'W' (Withdrawn).
- The MESSAGE table is queried for the handles that include a MODIFIED_DATE_TIME that is less than the current GMT time minus the number of days to keep in WIP.

3.2.2 Guidelines for Scheduling Archiving

Automatic archiving should be scheduled for non-production times if practical. This will eliminate the possibility of the archiving process causing any performance issues for the ME production usage.

Automatic archiving should be scheduled based upon the following factors:

- Rate at which new SFCs and shop orders are created and processed
- The availability of non-production time for running archiving

3.2.3 Potential Problems

The following are problems that can occur during automatic archiving.

3.2.3.1 Archive Timeout

The automatic archiving process will timeout if it takes longer than the number of minutes specified in the archive.timeout system setup parameter. This parameter can be changed in the System Setup (SS100) activity.

3.3 Restore (Un-archive) SFCs or Shop Orders

The Archive (DM530) activity handles both manual archiving and restoring of SFCs and shop orders. This section of the document covers only restoring (un-archiving).

NOTE: Un-archive does not apply to Messages and the Message Log table information that has been Archived.

3.3.1 Description and Applicability

Only one SFC or shop order can be selected at a time to be manually restored. To manually restore an SFC or a shop order:

1. Select which type of object you want to restore (SFC or shop order)
2. Enter or browse and select the specific SFC or shop order
3. Select OK

Only SFCs and shop orders which are currently stored in the ODS database Archive tables can be restored. If a shop order is selected to be restored, only that shop order will be restored. If an SFC is selected to be restored, the SFC (and the owning shop order, if archived) will be restored.

The types of information and related ME objects, for the SFCs and shop order which will be restored, are the ones listed in section 3.1.1.

3.3.2 Best Practices

We recommend that, after you restore a shop order, you use Shop Order Maintenance to change its status from Done to another status to ensure the system does not archive the shop order again the next time that the automatic archive utility runs.

3.4 Running Archiving Following Long Period without Archiving

If you are going to run archiving for the first time following a long period during which archiving has not been run, the following steps should be followed:

1. Set the *Days Before Archiving* system rule to the number of days since archiving was last run minus a small number of days 2. Run archiving
3. Reduce the value in the *Days Before Archiving* system rule by a small number of days
4. Run archiving
5. Repeat steps 3 and 4 until you have archived all of the data that needs to be archived at this time
6. Schedule archiving to run periodically as needed, as described in Automatically Archive SFCs and Shop Orders

4 Integration

Not Applicable

5 Archiving Setup

5.1 Archiving Setup Overview

Automatic archiving setup includes the following tasks / functions:

- Define how long (in days) the closed records must remain in the WIP database before the system archives them (see Days Before Archiving SFC/SO and Days Before Archiving Message Log Entries).
- Specify if components should only be archived when the parent assembly is archived (see Archive Component When Parent Archived).
- Specify if the Handle columns in the Archive tables have to be expanded for reporting purposes (see Expand Archive Handles). Since this setting affects performance, the system rule value is *false* by default.
- Specify how often and when the automatic archive program should run (see Background Process Execution).
- You execute automatic archiving either via the command line or using the defined settings in the Background Processing activity (see Executing Automatic Archiving).

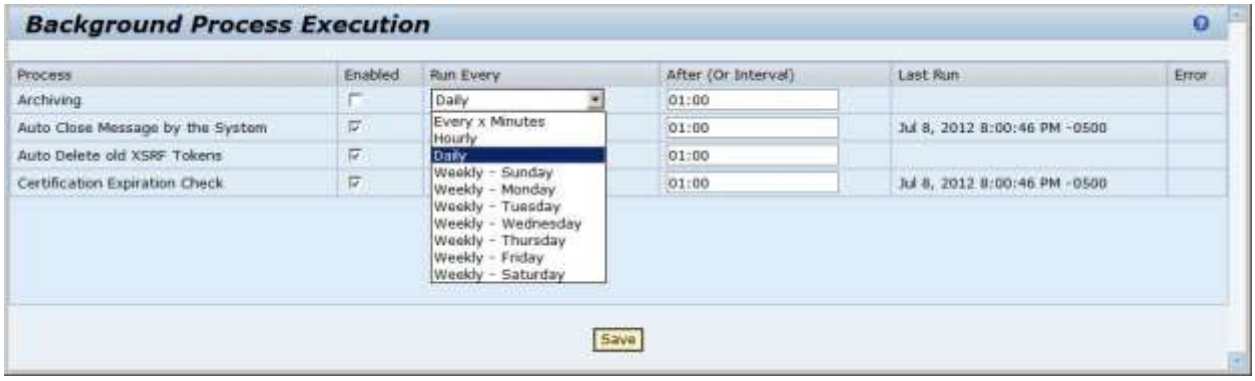
If a large number of SFCs or shop orders need to be archived at one time, or if materials have very large BOMs, you may need to modify one or more of the following system setup parameters:

- archive.children.update.batch.size
- archive.GUI.timeout
- archive.handle.expansion.fetch.size
- archive.handle.expansion.update.batch.size • archive.timeout

See System Setup Parameters for more information.

5.1.1 Background Process Execution

The Background Processing (SY999) activity can be used to schedule automatic archiving on a periodic basis. This is the recommended approach versus using the manual command line method. Background processing now invokes the archive for SFC's, Shopr Orders and for RTL and CTL Archive as well as the Message Log Archive.



Select the checkbox in the Enabled column to turn on automatic archiving via background process execution. The following table provides information regarding the other settings. Time of day is specified using a 24 hour clock (e.g. 1:00 PM is entered as 13:00)

Run Every Setting	After (Or Interval)	Automatic archiving will be started
Every x Minutes	Interval in minutes	Every x minutes, starting immediately upon Save
Hourly	Not used	At the top of the hour (n:00) each hour of each day
Daily	Start time (24 hour clock)	At the specified time every day
Weekly - <day>	Start time (24 hour clock)	At the specified time, on the selected day, every week

Select the Save button to initiate automatic archiving.

5.1.2 Executing Automatic Archiving from Command Line

You can also run automatic archiving from an operating system command line. For Windows, open a Command Prompt window on the ME server and run the Archive.bat file (typically found in …\SAP\SAPME\Clients\scripts). For Unix, run the Archive.ksh file.

You can also set up a scheduler to run the archive command line file periodically, at the time interval appropriate for your site. Command Line processing invokes the archive for RTL and CTL Archive as well as the Message Log Archive.

5.1.3 How Data is Batched

Batching, applying multiple database updates together, is used both for moving SFC and shop order child records from WIP tables to the ODS Archive tables and for expanding the handles in ODS Archive tables. Batching is used to speed up the overall archiving process by reducing the number of separate database transactions required. Applying updates to multiple rows in the same database table in a single transaction requires less time and overhead than performing each update as a separate transaction.

5.1.4 Best Practices

We recommend that archiving be run during a non-production time, if practical. This will eliminate the potential for system performance impacts during archiving.

5.2 External Configuration

5.2.1 Installation

Installation instructions are provided in the SAP ME Installation Guide, which can be downloaded from SAP Service Marketplace. See also the Links to Additional Information and Other Reference Material.

5.2.1.1 Creation and configuration of ODS database

The ODS database should be created and configured at the time that the ME system is installed. Instructions for the creation and configuration of the database are included in the SAP ME Installation Guide (see Other Reference Material).

5.3 Maintenance Activities

The use of Archiving can be configured using the system rules and system setup parameters in the following sections.

5.3.1 System Rules

The following rules are found in the System Rule Maintenance (SY100) activity.

5.3.1.1 Archive Component When Parent Archived

The settings and description for this system rule are specified in the following table. The global value can be overridden at the Site level, which can be overridden at the Material level.

Days Before Archiving Message Log Entries	Specifies the number of days that Closed, Withdrawn or Revoked message log records remain in the WIP database before the system archives them Default: 3650. Enter 0 to allow records to be archived immediately after the shop order is closed. Note: Use lower values with caution. Can override at: site
Days Before Archiving SFC/SO	Specifies the number of days that a closed shop order (SO) and its associated SFC numbers remain in the WIP database before the system archives them Default: 365. Enter 0 to allow records to be archived immediately after the shop order is closed. Can override at: site

Setting	Description
True	Automatic archiving only archives components when the parent assembly is archived, instead of when the component's status is Done. Change this setting, in the Material Maintenance (PD060) activity system rules, to override other archiving rules for materials that you want to keep in floor stock.

False (default)	Automatic archiving archives components when their status is Done. This setting results in fewer records in the WIP database at a given time. By the time components are consumed out of finished goods inventory into a top level assembly, their WIP records may have already been archived.

5.3.1.2 Archive SFCs When Shop Order Is Closed or Done

The settings and description for this system rule are specified in the following table. The global value can be overridden at the Site level.

Setting	Description
True	Automatic archiving archives SFCs belonging to a shop order as soon as the shop order status changes to Done or Closed. This does not apply if SFCs are set up for immediate archiving (see Days Before Archiving SFC/SO) since they will already be archived.
False (default)	Automatic archiving archives SFCs based upon the other archiving system rules

5.3.1.3 Days Before Archiving SFC/SO

This system rule specifies the number of days that a closed shop order or SFC remains in the WIP database before the system automatically archives it. The default value is 365. Enter 0 to allow shop orders and SFCs to be archived immediately after their status is changed to Closed or Done. The global value can be overridden at the Site level.

5.3.1.4 Expand Archive Handles

The ME databases contains foreign key values (handles) like SFCBO that contain values for site and SFC number concatenated together. This system rule controls whether foreign keys like this are exploded into multiples columns (like Site and SFC Number) for easier reporting. The settings and description for this system rule are specified in the following table. The global value can be overridden at the Site level.

Setting	Description
True	ME stores archived handles in an expanded format for easy reporting
False (default)	ME stores archived handles in their usual concatenated format

5.3.2 System Setup Parameters

5.3.2.1 archive.children.update.batch.size

This system setup property is the batch size used for moving child records while archiving. It specifies the maximum number of child records that will be moved from WIP tables to the corresponding ODS Archive tables in a batch update. The default is 100 records.

5.3.2.2 archive.GUI.timeout

This system setup property is the timeout value, in minutes, for the manual archiving process. The default is 30 minutes.

5.3.2.3 archive.handle.expansion.fetch.size

This system setup property is the fetch size used when retrieving records to expand handle columns in the Archive tables. The default is 50 records.

5.3.2.4 archive.handle.expansion.update.batch.size

This system setup property is the batch size used for updating records when expanding the handles into separate columns in the Archive tables. The default is 20 records.

5.3.2.5 archive.timeout

This system setup property is the timeout value, in minutes, for the automatic archiving process. The default is 30 minutes.

5.3.2.6 Best Practices

We recommend leaving the system setup parameters at their default values unless you find a need to change them.

6 Usage Scenario Examples

Not Applicable

7 Links to Additional Information

SAP Service Marketplace

8 Other Reference Material

Installation Guides SAP ME – The installation guide for your version of ME can be downloaded from the SAP Support Portal > Release & Upgrade Info > Installation & Upgrade Guides > SAP Business Suite Applications > SAP Manufacturing > SAP Manufacturing Execution SAP ME Help

9 Overview of Changes

Not Applicable